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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/528,607	03/21/2005	Jeroen Anton Johan Leijten	NL02 0894 US	4040

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EXAMINER

ELLIS, RICHARD L

ART UNIT	PAPER NUMBER
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2183

MAIL DATE	DELIVERY MODE
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05/22/2007

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/528,607	Applicant(s) LEIJTEN ET AL.	
	Examiner Richard Ellis	Art Unit 2183	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 19 March 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-9 and 13-17 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-3, 5-9, 13, 16 and 17 is/are rejected.
- 7) ☒ Claim(s) 14 and 15 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

1. Claims 1-9 remain for examination. Claims 13-17 are newly presented for examination.
2. The drawings are objected to as failing to comply with 37 CFR § 1.84(p)(5) because they do not include the following reference sign(s) mentioned in the description: IMU, UC₄, UC₀, UC₁, UC₂, UC₃, RF₂, RF₁, RF₀, CN, SQ, FU₂₀, FU₂₁, FU₂₂, DEC, TSC, IRN, ORN. Correction is required.
3. 35 USC § 101 reads as follows:

"Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter or any new and useful improvement thereof, may obtain a patent therefore, subject to the conditions and requirements of this title".
4. Claim 9 is are rejected under 35 USC § 101 because the claimed invention is directed to non-statutory subject matter.
 - A. As to claim 9 the invention claimed is "an instruction". "An instruction" is non-statutory subject matter for at least the following reasons:
 1. "An instruction" does not fall within one of the four statutory classes of invention. "An instruction" is clearly not a "composition of matter" nor is "an instruction" a "machine". Therefore the claimed invention can not fall within either of these two statutory classes. "An instruction" is also not a "manufacture" in that it is not an article produced from raw materials prepared by giving those materials new forms, qualities, properties, or combinations whether by hand labor or by machine. This leaves only the "process" statutory class into which "an instruction" could fall. A "process" defines actions (i.e., inventions that consist of a series of steps or acts to be performed). However, "an instruction" is not a description of a process (or series of steps) to follow. "An instruction" by itself is simply a command to perform a certain function and does not detail what series of steps to follow in order to accomplish that function. It is merely a command to a machine. "An instruction" is exactly equivalent to an order given by a General in an army to a Lieutenant when the General wishes the Lieutenant to carry out some action. The General simply issues an order (an instruction) to the Lieutenant to perform some action, for example to take control of a ridge held by insurgents. The General's order

does not detail the specific steps that the Lieutenant is to follow in taking control of the ridge. In the exact same way, "an instruction" does not detail which specific series of steps a CPU is to follow to perform the requested function. The instruction is simply an order to the CPU to perform the function, without detailing what specific steps need be followed to perform the function. Therefore, "an instruction" is not a process in the sense of a statutory process because it does not detail a sequence of steps to perform to accomplish a goal.

Therefore, "an instruction" does not fall within any of the four statutory classes of invention, and accordingly is non-statutory subject matter.

2. Further, "An instruction" in isolation is merely a tiny part of a computer program as a whole. Computer programs, per. se., are not processes, machines, manufactures, or compositions of matter and are therefore non-statutory subject matter:

"Since a computer program is merely a set of instructions capable of being executed by a computer, the computer program itself is not a process and USPTO personnel should treat a claim for a computer program, without the computer-readable medium needed to realize the computer program's functionality, as nonstatutory functional descriptive material. When a computer program is claimed in a process where the computer is executing the computer program's instructions, USPTO personnel should treat the claim as a process claim. See paragraph IV.B.2(b), below. When a computer program is recited in conjunction with a physical structure, such as a computer memory, USPTO personnel should treat the claim as a product claim. See paragraph IV.B.2(a), below." (MPEP § 2106.01)

"Similarly, computer programs claimed as computer listings per se, i.e., the descriptions or expressions of the programs, are not physical "things." They are neither computer components nor statutory processes, as they are not "acts" being performed. Such claimed computer programs do not define any structural and functional interrelationships between the computer program and other claimed elements of a computer which permit the computer program's functionality to be realized. In contrast, a claimed computer-readable medium encoded with a computer program is a computer element which defines structural and functional interrelationships between the computer program and the rest of the computer which permit the computer program's functionality to be realized, and is thus statutory. See Lowry, 32 F.3d at 1583-84, 32 USPQ2d at 1035. Accordingly, it is important to distinguish claims that define descriptive material per se from claims that define statutory inventions." (MPEP § 2106.01)

5. As presently presented, claim 9 is also explicitly claiming functional descriptive material. Functional descriptive material, per. se., is not statutory. This is exemplified in In re Warmerdam, 31 USPQ2d 1754, where the rejection of a claim to a disembodied data

structure was affirmed. In the present case, claim 9 is directed to a disembodied instruction. The disembodied instruction is merely a data structure. See claim 9 where the instruction is described by the structure of the data that it contains, e.g., that it contains an immediate value. Functional descriptive material is defined as data structures and computer programs which impart functionality when employed as a computer component. As detailed above, an instruction in isolation is a data structure, and as well, is a literal computer program. The instruction in and of itself does nothing. The instruction will only impart functionality when it is interpreted by a computer processor as a command to perform some function. Therefore, an instruction in isolation is merely functional descriptive material, and the claim is additionally non-statutory for this reason.

6. The text of those sections of Title 35, US Code not included in this action can be found in a prior Office Action.
7. Claims 1-4 and 6-12 are rejected under 35 USC § 102(b) as being clearly anticipated by Slavenburg, U.S. Patent 6,122,722.
8. Claims 1-4 and 6-12 are rejected under 35 USC 102(b) as being clearly anticipated by Mehra, U.S. Patent 5,974,537.
9. Claim 5 is rejected under 35 USC § 103 as being unpatentable over Slavenburg, U.S. patent 6,122,722, in view of Hampapuram et al., U.S. Patent 5,787,302.
10. Claim 5 is rejected under 35 USC § 103 as being unpatentable over Mehra, U.S. patent 5,974,537, in view of Hampapuram et al., U.S. Patent 5,787,302.
Slavenburg, Mehra, and Hampapuram were cited as a prior art references in paper number 20051219, mailed December 21, 2006.
11. The rejections are respectfully maintained and incorporated by reference as set forth in the last office action, paper number 20051219, mailed December 21, 2006.
12. New claims 13, 16-17 are rejected under 35 USC 102(b) as being clearly anticipated by Slavenburg, U.S. Patent 6,122,722.
13. As to new claims 13 and 16, Slavenburg taught that the dedicated issue slot was

controlled to load the immediate value by a control word consisting of the immediate value (see fig. 7 of Slavenburg where it is shown that the "control word" to the "CONSTANT (PSUEDO UNIT 1) OUTPUT) is the constant value itself, and therefore is a "control word consisting of the immediate value" as claimed).

14. As to claim 17, Slavenburg taught executing the dedicated instruction (430) with a single functional unit (fig. 3, "CONST UNIT" fig. 7, "CONSTANT (PSUDEO UNIT 1)") of the dedicated issue slot.
15. New claims 13, 16-17 are rejected under 35 USC 102(b) as being clearly anticipated by Mehra, U.S. Patent 5,974,537.
16. As to new claims 13 and 16, Mehra taught that the dedicated issue slot was controlled to load the immediate value by a control word consisting of the immediate value (see fig. 5 of Mehra where it is shown that the "control word" to the "CONST" unit 531 is the constant value itself (fig. 6, 610), and therefore is a "control word consisting of the immediate value" as claimed).
17. As to claim 17, Mehra taught executing the dedicated instruction (610) with a single functional unit (531) of the dedicated issue slot (551).
18. Applicant's arguments filed March 19, 2007, have been fully considered but they are not deemed to be persuasive.
19. In the remarks, applicant argues in substance:
 - A. That: "Slavenburg discloses a plurality of issue slots in FIG. 4, and a plurality of functional units in FIG. 3. However, Slavenburg does not disclose that **each issue slot comprises a plurality of functional units**. Instead, in Slavenburg a pair of switching matrices 401, 402 are provided for multiplexing the issue slots among various functional units." (emphasis in original)

This is not found persuasive because when one compares Slavenburg's description of the prior art (fig. 2) with his invention (fig. 4) one recognizes that in the prior art, each "issue slot" "comprised" only a single functional unit (e.g., ALU₁ SLOT). Whereas, in Slavenburg's invention (fig. 4) it is seen that each "issue slot" (1 ... 3 in element 410) can "comprise" (contain) any instruction for any execution unit of fig. 3. Accordingly, each "issue slot"

"comprises" "multiple functional units" because each issue slot of Slavenburg can issue instructions to more than a single functional unit as in the prior art.

- B. That: "the processing apparatus of claim 1 includes a dedicated issue slot arranged for loading an immediate value in dependence upon a dedicated instruction comprising the immediate value. ... The Office Action states that Slavenburg discloses such features in conjunction with the CONST Type Slot 430 and CONST unit. However, the CONST unit does not load an immediate value. Instead, it loads a binary value which is a concatenation of the opcode fields of the issue slot in which a CO unit operation was issued. Clearly, this is not an immediate value."

This is not found persuasive because applicant's argument is utilizing an unknown, and improper, definition of "immediate value". As seen from Jerry M. Rosenberg, *Dictionary of Computers, Information Processing & Telecommunications*, 2nd edition, the definition of "immediate value" is:

"immediate data

(1) data contained in an instruction rather than in a separate storage location"

By looking only to applicant's own explanation of the operation of Slavenburg quoted above, that "it loads a binary value which is a concatenation of the opcode fields of the issue slot", it is seen that applicant has exactly recited an "immediate value" in that this is "data contained in an instruction". This is further evidenced from Slavenburg by reference to fig. 7 where it is seen that the "constant (pseudo unit 1) output" is shown being created by taking six bits of data from the opcode, seven bits of data from register source 1, and seven bits of data from register source 2 of the constant instruction. This is clearly "data **contained in** an instruction" and as such is exactly an "immediate value" as that term is defined in the art.

- C. That: "The Office Action fails to cite anything at all in Mehra which discloses that **each issue slot comprises a plurality of functional units**. Indeed, it is apparent from inspection of FIG. 3 that each issue slot has a single functional unit, not a plurality of functional units." (emphasis in original)

This is not found persuasive because as is seen from fig. 5 of Mehra, Mehra discloses an arrangement where each issue slot (521, 522, 523) "comprises" (connects to) a plurality of functional units (531 ... 537).

- D. That: "Meanwhile, the Office Action states that Mehra discloses such features in conjunction with the CONST Type Slot 430 and CONST unit. However, the Office Action fails to cite anything in Mehra that discloses a dedicated issue slot arranged for

loading an immediate value in dependence upon a dedicated instruction comprising the immediate value." (emphasis in original)

This is not found persuasive because as seen from fig. 6 of Mehra, the instruction for the CONST unit (610) contains the constant therein and as such the value therein is an "immediate value" for the same reasons as detailed above in regards to the Slavenburg reference.

E. That: "Also, the processing apparatus of claim 3 includes a dedicated register file for storing the immediate value, the dedicated register file being accessible by the dedicated issue slot. Meanwhile, inspection of FIG. 2 of Slavenburg and FIG. 4 of Mehra reveals that the constant instructions of each reference includes a destination register, and therefore it is clear that there is no dedicated register file." (emphasis in original)

This is not found persuasive because in both the Slavenburg and Mehra references, there exist only one register file (403 in Slavenburg, 540 in Mehra) and as such, this register file is "dedicated" to storing values from the CONST units of both references because it is the only location into which the units have available for storage of constant values. Therefore, it is "dedicated" to storing constant values.

F. That: "Among other things, the instruction set of claim 9 includes a dedicated instruction having an immediate value, which dedicated instruction when executed by a dedicated issue slot causes the dedicated issue slot to load the immediate value.
As explained above with respect to claim 1, neither Slavenburg nor Mehra discloses a dedicated instruction having an immediate value, which dedicated instruction when executed by a dedicated issue slot causes the dedicated issue slot to load the immediate value." (emphasis in original)

This is not found persuasive because both Slavenburg and Mehra disclose both an instruction set (Slavenburg fig. 4, Mehra fig. 6) that contains a dedicated instruction having an immediate value (Slavenburg 430, Mehra 610) that when executed cause the immediate value to be loaded (the very purpose for the existence of both instructions). Accordingly, both references exactly disclose that which is claimed by claim 9.

20. Claims 14-15 are objected to as being dependent upon a rejected base claim, but would render the base claim allowable if bodily incorporated into the base claim such that the new base claim included all of the original limitations of the base claim, any intervening claims, and the objected claim.

Serial Number 10/528,607
Art Unit 2183
Paper Number 20070517

- 7 -


21. A shortened statutory period for response to this action is set to expire 3 (three) months and 0 (zero) days from the mail date of this letter. Failure to respond within the period for response will result in **ABANDONMENT** of the application (see 35 USC 133, MPEP 710.02, 710.02(b)).

22. Any inquiry concerning this communication or earlier communications from the Examiner should be directed to Richard Ellis whose telephone number is (571) 272-4165. The Examiner can normally be reached on Monday through Thursday from 7am to 5pm.

If attempts to reach the Examiner by telephone are unsuccessful, the Examiner's supervisor, Eddie Chan, can be reached on (571) 272-4162. The fax phone number for the USPTO is: (703)872-9306.

Any inquiry of a general nature or relating to the status of this application should be directed to the Group receptionist whose telephone number is (571) 272-2100.

Richard Ellis
May 17, 2007



RICHARD L. ELLIS
PRIMARY EXAMINER